

Environmental Assessment  
for the  
**Construction of Power and Fiber  
Optic Lines to Facilities in the  
Yukon Training Area, Alaska - Phase 4**

354th Fighter Wing  
Eielson Air Force Base, Alaska  
November 2007

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**FINDING OF NO SIGNIFICANT IMPACT (FONSI)**  
**And**  
**FINDING OF NO PRACTICABLE ALTERNATIVE**  
**for the**  
**Construction of Power and Fiber Optic Lines to Facilities in the**  
**Yukon Training Area, Alaska - Phase 4**

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## **Introduction**

The 354th Fighter Wing operates, maintains, and trains combat forces in close air support and interdiction missions in three operational theaters. As part of this mission Eielson AFB (Eielson) operates combat training facilities that are some of the finest in the world. Each year RED FLAG-Alaska, based at Eielson, conducts four joint training exercises with Elmendorf Air Force Base, as well as other United States Air Force units and units from allied countries. The Air Combat Maneuvering Instrumentation system, a sophisticated electronic warfare system, was installed on US Army range lands that comprise Eielson's range facilities. The continued efficient and reliable operation of these range facilities and training programs are of vital importance to Eielson's mission.

## **Description of the Proposed Action**

The proposed action will result in the construction of 2.84 miles of electrical transmission and fiber optic communication lines along Beaver Creek Road, with a spur that would connect to Firing Point-17 (FP-17), in Fort Wainwright's Yukon Training Area, Alaska. Fiber optic cable would also be collocated on the power line poles. This power and communications system will significantly enhance the operational efficiency and reliability of the range, cutting operational costs by replacing expensive diesel generators and propane gas fired power systems.

## **Alternatives to the Proposed Action**

One alternative to the proposed action was identified. Alternative 1 would supplement the existing constant run generators with a wind generation system located at Camera Site 2.

## **No Action Alternative**

The no action alternative would result in continued operation of range facilities with existing power sources. Facilities at Camera Site 1, as well as other intermediately located facilities, would continue to be powered by continuous-run diesel generators and propane gas fired systems. A scheduled repair and replacement program would still be undertaken under this scenario, as it would be essential for the long-term operation of the range systems to maintain existing infrastructure.

## **Environmental Impacts of the Proposed Action**

### **Wetlands**

There will be some impacts to wetlands. The proposed action calls for the crossing of wetlands associated with Globe Creek. Vegetation in a 30-foot-wide by 760-foot-long right-of-way would be disturbed by the movement of construction equipment and the augering of three power pole holes. Total



area of disturbance would be 4.3 acres. Area disturbed would include moderate value scrub/shrub wetlands that provide habitat for a few species of birds.

### **Biological Resources**

Impacts to biological resources from the proposed project are expected to be minimal. The power line will follow an existing road right-of-way. Some clearing will be done to install the line. It will be done mainly by hydro-axe and hand tools. The limited clearing will likely enhance the right-of-way for browse habitat, especially for moose and snowshoe hare.

### **Threatened or Endangered Species**

There are no threatened or endangered species in the project area. The project area is not suitable habitat for any of the threatened or endangered species occurring in the Alaskan interior.

### **Historical or Cultural Resources**

The entire proposed power line corridor along Beaver Creek Road is outside the impact area and was previously surveyed by a qualified archeologist and no sites were found that are eligible for listing on the National Historic Register. The portion that extends from Beaver Creek Road to Camera Site 2 is within the impact area of the Stuart Creek Range and was not surveyed due to the risk of unexploded ordnance. In the event that historic or cultural sites are discovered during project construction, activities will be halted and a professional archeologist will evaluate the find before further construction would commence.

### **Air Quality**

The proposed action will have minor air quality impacts during construction due to fugitive dust and machinery exhaust. Such impacts will be highly localized and temporary in nature. In the long-term, the air quality of the area will be improved due to reduced emissions from diesel generator operation.

### **Subsistence Practices**

Section 810 of the Alaska National Interest Lands Conservation Act (16 USC § 3120) requires the federal agency with primary management jurisdiction over the land to consider the potential impact of the planned use on subsistence practices. The analysis provided in the Environmental Assessment (EA) shows that the proposed action will not unnecessarily impair rural subsistence practices.

### **Mitigation**

No mitigation was required by state and federal agencies for any aspect of the proposed work.

### **Public Comment**

*Public comments are being solicited for the Draft EA/FONSI for this project.*

### **Procedural Requirements**

### **Findings**

Pursuant to the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality implementing regulations for NEPA (40 CFR Part 1500-1508), Army Regulation

## Procedural Requirements

### Findings


Pursuant to the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality implementing regulations for NEPA (40 CFR Part 1500-1508), Army Regulation 200-2, *Environmental Analysis of Army Actions* (32 CFR Part 651), and Air Force Instruction 32-7061, *Environmental Impact Analysis Process* (32 CFR Part 989), the Air Force has conducted an EA for the installation of power and fiber optic lines in the Yukon Training Area, Alaska. This FONSI has been developed pursuant to information provided in the accompanying EA.

**Finding of No Practicable Alternative:** To adequately meet Eielson's mission of training aircraft to provide close air support of ground troops in an arctic environment, the efficient operation of complex range facilities is essential. Providing an electric power and fiber optic communication grid to operate these range facilities is critical to that mission. Taking all the environmental, economic, and other pertinent factors into account, pursuant to Executive Order 11990, the authority delegated by SAFO 791.1, and taking into consideration the submitted information, I find that there is no practicable alternative to this action and the proposed action includes all practical measures to minimize harm to the environment.

**Finding Of No Significant Impact:** Based on this EA, which was conducted in accordance with the requirements of all applicable regulations, the undersigned decision authorities have concluded that the construction of power and fiber optic lines would not result in significant impacts to the environment. We also find that the preparation of an environmental impact statement is not warranted.

  
JOHN R. CAWTHORNE, Colonel, USAF  
Deputy Director, Installations and Mission Support  
Pacific Air Forces

4 APR 08  
Date

  
DAVID L. SHUTT  
Colonel, U.S. Army  
Commanding

15 May 08  
Date



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WILLIAM M. CORSON, Colonel, USAF  
Director, Installations and Mission Support

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Date

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DAVID L. SHUTT  
Colonel, AR  
Commanding

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Date

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**Environmental Assessment (EA)**  
**for the**  
**Construction of Power and Fiber Optic Lines to Facilities in the**  
**Yukon Training Area, Alaska - Phase 4**

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## **1.0 Purpose and Need for Action**

Section 1.0 provides a description of the purpose and need for the proposed action.

### **1.1 Background and Objectives for the Proposed Action**

1.1.1 Eielson Air Force Base (Eielson) is proposing to extend electric power and fiber optic communication lines in the Yukon Training Area (YTA) to connect to range facilities that are currently powered by diesel and propane generators. This would be Phase 4 of a project whose construction was initiated in 2004.

1.1.2 Eielson was established in 1944 and is currently part of the Pacific Air Forces' (PACAF) Command. The 354th Fighter Wing (FW) operates, maintains, and trains combat forces in close air support and interdiction missions in support of the war plans in three operational theaters. The 354 FW's mission is to train and equip personnel for close air support of ground troops in an arctic environment. The 168th Air Refueling Wing (ARW) is the primary tanker unit of the Pacific Rim, annually transferring over 17 million pounds of fuel in flight to predominantly active duty aircraft. In support of their mission, the host unit at Eielson, the 354 FW, operates F-16 Fighting Falcon aircraft. The 168 ARW is also based at Eielson and currently flies KC-135 aircraft.

1.1.3 In the early and mid-1990s, the United States Air Force (USAF) established in Alaska an advanced, instrumented air-to-air and air-to-ground training and bomb scoring range to support the PACAF operations in general and specifically the 354 FW at Eielson. The Air Combat Maneuvering Instrumentation (ACMI) system was authorized by Congress to facilitate changes in the force structure of the USAF. The move was also intended to support an increase in the number of large force exercises and joint training exercises conducted in Alaska.

1.1.4 The range combat training facilities operated by Eielson are some of the finest in the world. Each year the 353d Combat Training Squadron, based at Eielson, conducts joint training exercises with Elmendorf Air Force Base. Formerly known as COPE THUNDER exercises, they have been renamed RED FLAG-Alaska (RF-A). Each RF-A exercise is a multi-service, multiplatform coordinated, combat operations exercise tailored to the operational capability of participating units. The exercise has grown into PACAF's premier simulated combat airpower employment exercise. All RF-A exercises take place over Alaskan and Canadian airspace. The entire airspace is made up of 17 permanent military operations areas and high altitude training areas, plus two restricted areas, for a total airspace of more than 66,000 square miles. The continued operation of this range facility and training program is of vital importance to Eielson's mission.



1.1.5 The initial ACMI system was constructed primarily on military lands within existing ranges in the interior of Alaska. A portion of the system is located in Fort Wainwright's YTA that is situated east of Eielson land. Currently, continuous-run diesel generators and/or propane gas powers many of the remote components of the ACMI system. The operation and maintenance of these types of power systems is expensive, manpower intensive, and results in significant periods of operational downtime. To increase reliability and reduce maintenance costs, Eielson is proposing to extend power and fiber optic lines to increase coverage to portions of the YTA that were not covered by the Phase 1, 2, and 3 construction. Phase 1 construction is complete and providing power and fiber optic lines that connect the Central Heat and Power Plant to Camera Site 2. Phase 2 is also complete and provides 14 additional miles of power and fiber optic lines that connect several instrument sites (known as Firing Points) to the Eielson power grid along Skyline Drive and Brigadier Road corridors. Phase 3 further expanded the power grid by adding 9 miles of power and fiber optic lines to facilities accessed by Camera Site 1 Road. The proposed Phase 4 would continue the expansion of the power grid in the vicinity of Beaver Creek Road, extending from Hill 1710 to Firing Point 16 (FP-16).

## 1.2 Location of the Proposed Action

1.2.1 Eielson is located in the Tanana River Valley on a low, relatively flat, floodplain terrace that is approximately 2 miles north of the active river channel. Other communities near Eielson include Moose Creek to the north and Salcha to the south. Base lands include 19,790 contiguous acres bounded on the west by the Richardson Highway and on the north and east by the Army's YTA. To the south, the community of Salcha borders Eielson.

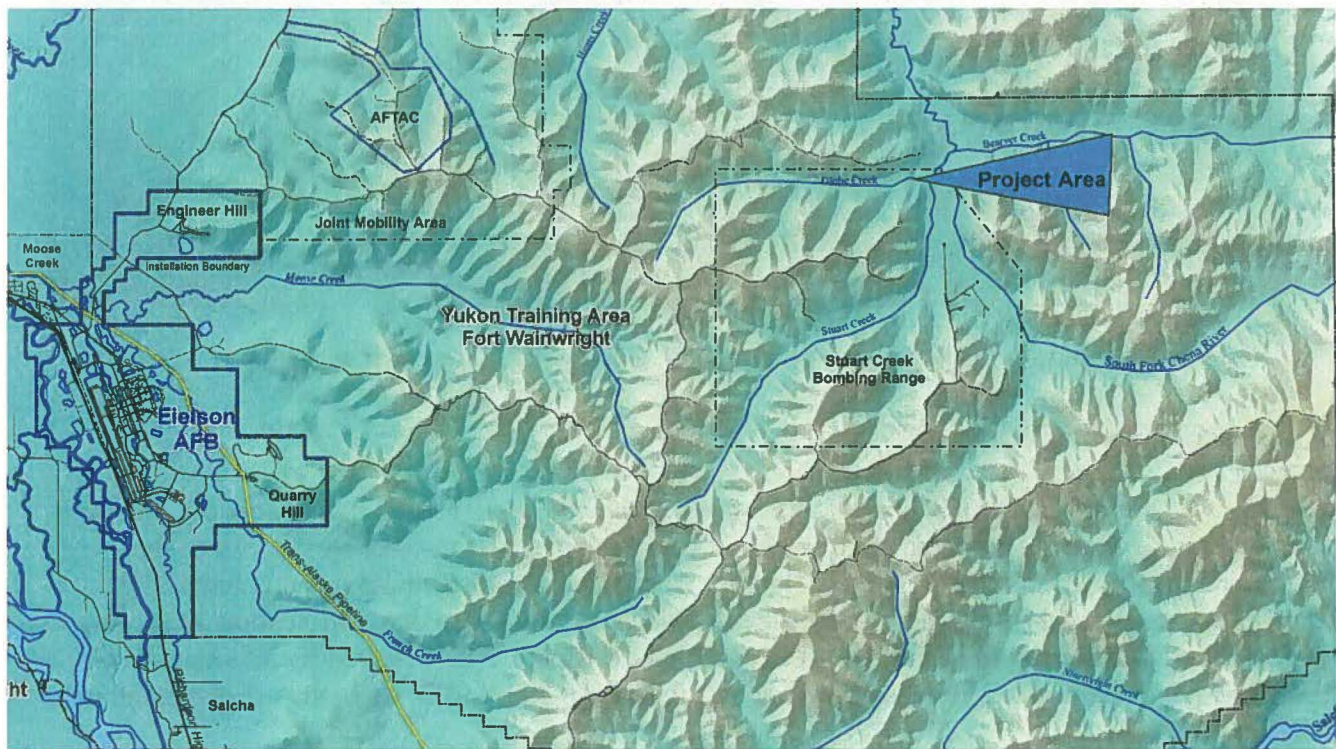


Figure 1 – Location of Project Area



1.2.2 Fort Wainwright's YTA is located just east of the Eielson line and is approximately 30 miles east/southeast of Fairbanks, Alaska (Figure 1). The YTA contains approximately 260,000 acres and is located within the Fairbanks North Star Borough. The proposed electrical transmission line would be constructed adjacent to the existing road system in the YTA. The line will follow Beaver Creek Road between Hill 1710 and FP-16. There will also be a spur line extending from Beaver Creek Road to FP-17 which is located within the Stuart Creek Impact Area.

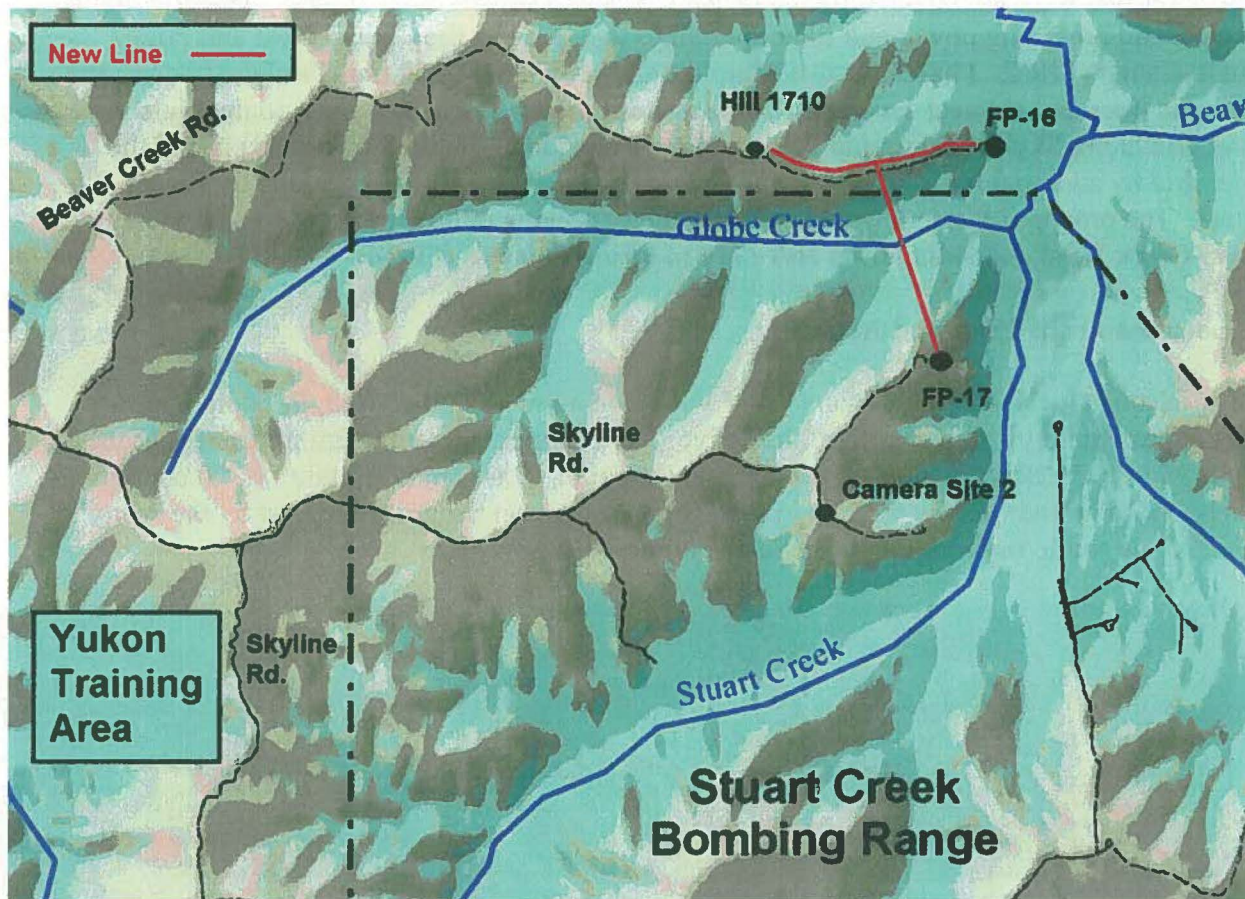


Figure 2 – Proposed Power Line Project Location and Routing

### 1.3 Decision to be Made

1.3.1 As required by 32 CFR Part 989, the *Environmental Impact Analysis Process* will be used to determine what the potential environmental consequences of constructing Phase 4 of the power and fiber grid in the YTA are. This EA is intended to satisfy these requirements. The proposed action and all alternatives considered will be addressed in detail in Section 2.0 of this document. A description of the resources associated with the areas affected by all alternatives will be provided in Section 3.0 and the impacts that could result from each one are discussed in Section 4.0.

1.3.2 Based on the evaluation of impacts in the EA, a Finding Of No Significant Impact (FONSI) will be published if there is a finding of no significant environmental impact for the proposed action. If it is determined that the proposed action will have significant environmental impacts, and appropriate mitigation measures applied will not lessen the impacts to below the threshold of significant, then the proposed project will be evaluated in an Environmental Impact Statement (EIS).

1.3.3 The EA, a draft FONSI (if applicable), and all other appropriate planning documents will be provided to the HQ PACAF/A7, the decision maker, for review and consideration. If, based on a review by the decision maker of all pertinent information, a FONSI is proposed, a public notice will be published in accordance with 40 CFR 1506.6. All interested parties will have 30 days to comment on the decision to the USAF. All comments will be reviewed and evaluated at the end of the 30-day comment period. All substantive comments will be considered prior to signing the FONSI.

1.3.4 Executive Orders 11988 and 11990 requires the heads of federal agencies to find that there is no practicable alternative before the agency takes certain actions impacting wetlands or 100-year floodplains. To address this requirement, the Secretary of the Air Force's designated agent, HQ PACAF/A7, will sign a document that addresses the issues of wetlands and floodplains that may be associated with actions the USAF proposes to take. This document, known as a Finding Of No Practicable Alternative (FONPA), will state which alternative, the proposed action, the alternative project, or the no action alternative, will be selected as the appropriate course of action. The FONPA will be combined with the FONSI into one document. It will contain documentation that all practicable measures to minimize harm to wetlands and/or floodplains have been taken, and that all appropriate mitigation will be incorporated into the project design or otherwise authorized.

1.3.5 In addition to the environmental review process conducted by the USAF, the US Army in Alaska, as the designated land manager of the YTA, will also conduct a review of all pertinent aspects of the EA process pursuant to Army Regulation 200-2, *Environmental Analysis of Army Actions* (32 CFR Part 651). Upon the successful completion of that review, the Garrison Commander at Fort Richardson will jointly sign the FONSI/FONPA with the HQ PACAF/A7.

#### **1.4 National Environmental Policy Act Actions That Influence This Assessment**

1.4.1 *Alaska Army Lands Withdrawal Renewal-Final Legislative EIS, U.S. Army, 1998.* This EIS assesses the environmental consequences associated with the continued military use of US Army lands and the renewed withdraw of those lands including the Fort Wainwright Yukon Maneuver Area.

1.4.2 *Fort Wainwright Resource Management Plan and Final EIS, U.S.D.I., Bureau of Land Management, 1989 and Integrated Natural Resources Management Plan 2002-2006, U.S. Army Alaska, Volume 3, Fort Wainwright.* These documents provide summaries of alternate resource management plans for the Fort Wainwright Yukon Maneuver Area.



#### 1.4.3 *Integrated Natural Resources Management Plan, Eielson Air Force Base, 2003.*

This document addresses natural resource management on Eielson and provides guidance for management activities and long-range planning on Eielson managed lands.

1.4.4 *Construction of a Power and Fiber Optic System for Facilities in the Yukon Training Area, Alaska, 2003.* This document addresses the proposal to construct a power and fiber optic communications system for portions of the YTA. Many issues that are being considered in the current EA document were discussed in this EA and analysis summaries are incorporated by reference.

1.4.5 *Construction of Power and Fiber Optic Lines to Facilities in the Yukon Training Area, Alaska - Phase 3, 2006.* This EA analyzed the most recent phase of the construction of power and fiber optic systems in the Yukon Training Area. Many issues that are currently being considered in the current EA document were discussed in this EA and analysis summaries are incorporated by reference.

### 1.5 Project Scoping/Significant Issues

This section provides a summary of issues raised during the scoping process that were deemed significant for analysis in the EA. The scoping process identifies relevant issues and establishes the limits of the environmental analysis. Scoping meetings were held to discuss the proposed action and alternatives to the proposed action. These meetings involved USAF communications squadron personnel, RF-A range operations, Army range personnel, and federal and state resource agency personnel. The topics listed below were some of the issues identified as relevant to the analysis process.

1.5.1 *Coordination With Army Range Operations:* Army range personnel expressed a need to coordinate the location of the power lines relative to Army range facilities due to the potential conflict that firing of munitions and aboveground structures potentially create.

1.5.2 *Hazardous Material Releases:* An ongoing issue that is related to the need for the project is the concern about the present system's potential for a hazardous materials release. Current operations include precautions taken to prevent a release of hazardous materials (fuel, oil, and antifreeze) associated with the operation of generators. Even with precautions, a malfunction in a generator or mishandling of fuel has caused hazardous material releases in the past. Three hazardous material releases of reportable quantity have been recorded in a recent 2-year period.

1.5.3 *Wildlife:* Due to the presence of wildlife in the project area, direct and indirect impacts to individual species must be considered. Potential impacts include alteration or loss of habitat and unintentional taking of wildlife. Actions such as the construction of power lines or installation of a wind generator have the potential to result in unintentional taking due to bird strikes on towers. During project scoping, issues were discussed with the US Fish and Wildlife Service (USFWS) about their requirements for design of wind generation structures.

1.5.4 *Mission Integrity:* The USAF staff expressed concerns about the reliability of the existing system in providing power to a crucial communication site. The mission integrity would be

jeopardized by the loss of training and tracking data in the event of power failures due to generator malfunction.

### **1.6 Federal and State Permits or Licenses Needed to Implement the Project**

1.6.1 The proposed action and alternative 1 would result in placement of structures on United States Army Alaska (USARAK) land. The USAF would be responsible for procuring the necessary land use permit from the Army.

1.6.2 A Section 106 clearance from the Alaska State Historic Preservation Office will be required for this project.

1.6.3 An Army Corps of Engineers Nationwide Permit would be required for the portion of the power line that traverses wetlands.

## 2.0 Description of the Proposed Action and Alternatives

Section 2.0 provides a description of the proposed action and alternatives considered to achieve the purpose and need described in Section 1.0. The proposed action, alternative 1, and the no action alternative are addressed.

### 2.1 Proposed Action – Construct Power and Fiber Optic Lines Along Beaver Creek Road With a Spur to FP-17

2.1.1 The proposed action would result in the construction of a power and communication distribution system that would extend along Beaver Creek Road from Hill 1710 to FP-16 (1.68 miles) and from Beaver Creek Road across the valley to FP-17 (1.16 miles). This line would connect into an existing line that was constructed to FP-17 as part of Phase 3 construction of the power grid for the YTA.

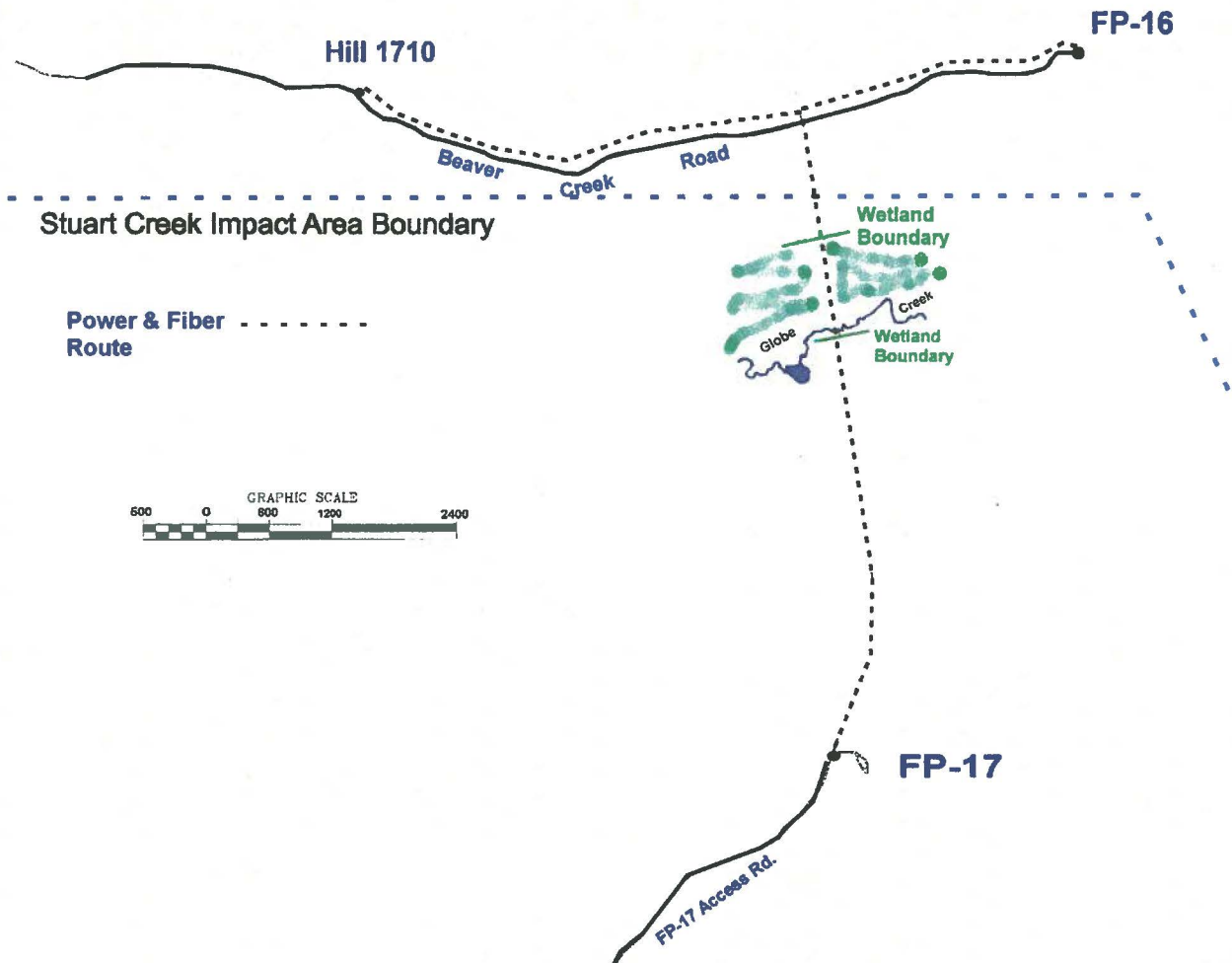
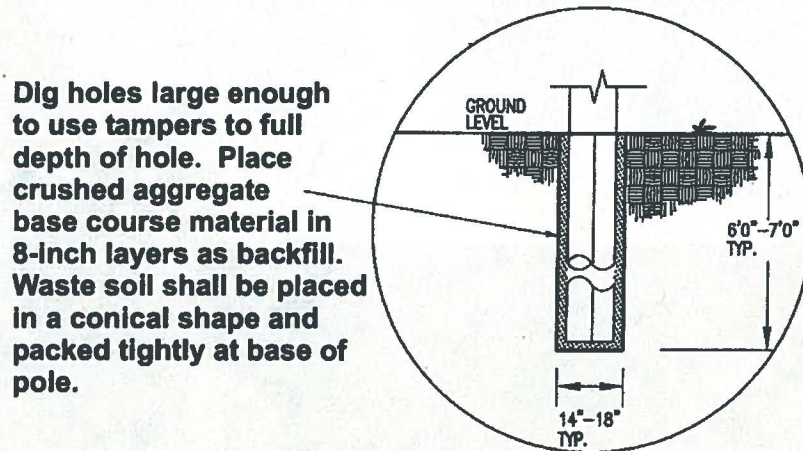


Figure 2-1 – Routing of Power/Fiber Optic Line

2.1.2 The power cables will be hung on standard, treated wood poles with cross members. The poles would be placed with spacing between 250 feet and 300 feet, depending on the terrain.

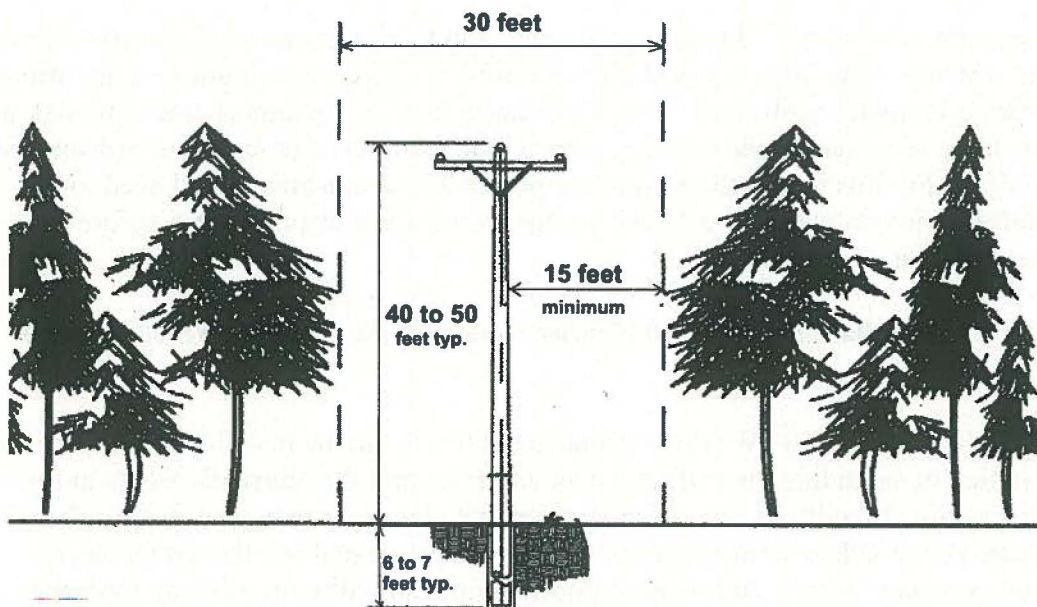
The poles will be installed by augering a 24-inch-wide hole to an approximate depth of 7 feet. Poles would be set with gravel material used as backfill (see Figure 2-2).



**Figure 2-2 – Typical Power Pole Excavation Detail**

2.1.3 In addition to the power cables, the distribution poles would carry a 48 fiber, single-mode fiber optic cable to allow for current and future expansion of the communication capabilities to these remote sites.

2.1.4 Most of the power poles will be set right at the toe of the existing roadbed with a right-of-way configuration similar to that depicted in Figure 2-3. In areas where it deviates from this, and the areas which have not been previously cleared of trees, a hydro-axe would be used to clear the right-of-way. Some hand clearing of trees may be needed in selected situations.



**Figure 2-3 – Typical Pole Placement and Right-of-Way Configuration**





**Figure 2-4 – Proposed Beaver Creek Road Corridor (Left Side of Road)  
Between Hill 1710 and FP-16**

2.1.5 Approximately 1.16 miles of the proposed power and fiber line route will be sited within the Stuart Creek Impact Area. This is a portion of the range in which live munitions are utilized and to which access is tightly controlled. Not all ordnance fired in the impact area explodes and as a result of its large area and rugged terrain, retrieval and removal of unexploded ordnance is not always possible. For this reason the path of the power line in this area would need to be cleared of all unexploded ordnance by a USAF explosive ordnance disposal team before construction could begin.

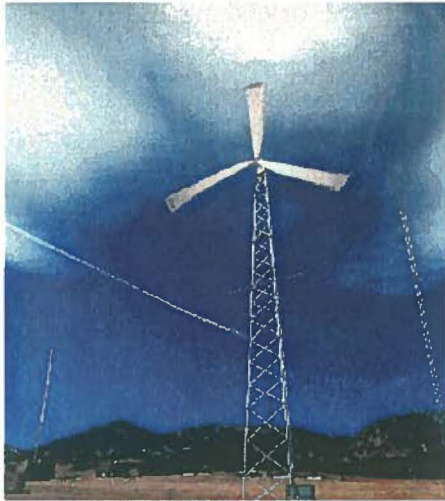
## **2.2 Alternative 1 – Installation of a Wind Energy System With Diesel Powered Backup Generator**

2.2.1 Under this alternative, a 50 kW wind turbine generator would be installed at the Camera Site 2 facility in lieu of extending the exiting power and fiber grid that currently exists in the YTA. The Camera Site 2 facility is schedule to be connected to the power grid as a result of Phase 3 construction that will be completed in 2008. It is a developed site that could easily contain the wind generator and all associated support equipment within its existing footprint.



2.2.2 A 50 kW wind turbine would provide the primary electrical load. During periods of high wind, the wind turbine would create more power than is being consumed at both sites. This excess energy would be stored in a battery bank for use during periods of low wind. If the battery voltage falls below a preset limit, the backup diesel generator would automatically start and operate until the batteries reach full charge.

2.2.3 The wind turbine would be an upwind, horizontal axis, three-blade turbine (Figure 2-5). The blades would have an approximate 46-foot rotor diameter and be rated at 50 kW at a wind speed of 25 miles per hour. The wind turbine would produce a direct current (DC) that would be converted into alternating current (AC) by use of a DC-AC inverter. The wind turbine would be capable of providing 240 volt, three-phase power.



**Figure 2-5 – Wind Turbine**

2.2.4 The wind turbine would be mounted on a 170-foot guyed lattice tower. The tower would be placed on a 10- by 10-foot concrete subbase and be supported by guy wires. A 50-foot diameter area would be cleared of vegetation for installation of the guy wires and tower.

2.2.5 The wind tower and turbine would be located within the existing 1 acre Camera Site 2 facility footprint. The results of a siting analysis would determine the exact placement of the wind generator. Factors taken into consideration would be the roughness of terrain, local wind velocity and density measurements, presence and height of surrounding vegetation, bird migration routes, and line-of-sight measurements for microwave transmissions.

2.2.6 A 10- by 40-foot steel connex type container would be required to house the protective fuses, controls, monitoring equipment, and storage batteries for the energy system. This would also be located at the Camera Site 2 facility.

2.2.7 The storage battery bank would consist of a string of 80, 12 volt, 1,500 amp hour, deep cycle batteries. The gel-celled lead-acid battery bank would be capable of supplying an 8 hour electrical energy reserve.

2.2.8 The diesel generator would be a 40 kW diesel generator with automatic controls that would allow the unit to start during low battery voltage conditions. The diesel unit would power the communications site and automatically turn off when the battery bank is fully charged.

### **2.3 No Action Alternative**

No changes would be made under this alternative. Range facilities would continue to be operated by diesel and propane generators. Current maintenance and refueling activities would continue and a scheduled repair/replacement program would be implemented.



### 3.0 Affected Environment

Section 3 describes the existing environment and resource components that would be impacted by the proposed project and the alternatives. The resources discussed in this section are presented as a baseline for comparisons of environmental consequences. Resources discussed in the section are as follows:

- Physical resources, which include general site location and topography, geology and soils, climate and air quality, ground and surface water, wetlands, and infrastructure improvements.
- Biological resources, including vegetation, wildlife, fish, threatened, or endangered species.
- Cultural resources including archeological or historical resources.
- Recreational resources.
- Socioeconomic factors.

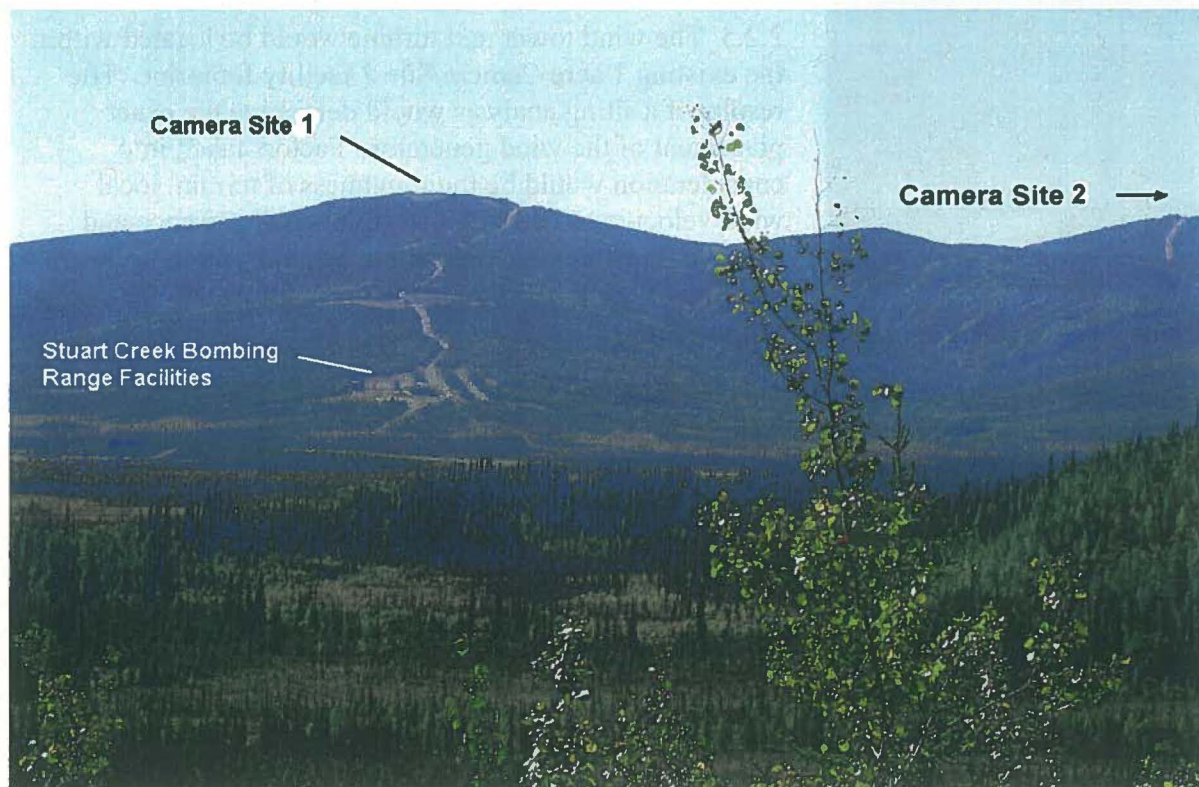


Figure 3-1 – View of Stuart Creek Impact Area from FP-16

#### 3.1 Physical Resources

The topography of the proposed project is typical of the Yukon-Tanana Upland of the Northern Plateau physiographic province. The Yukon-Tanana Upland is characterized by a series of

rounded, rolling hills, rising 700 to 3,000 feet above mean sea level. The elevation ranges from 2,483 feet at Pole Hill, 2,380 feet at Camera Site 2, and 3,265 feet at Hill 3265. Gentle side slopes and broad undulating divides typify the area. The valley floor is classified as alluvium basins with valleys in the area ranging from broad to steep, narrow valleys. Several small streams flow through the valley floor including Stuart Creek and Globe Creek which are tributaries of the South Fork of the Chena River. Most streams originating in the YTA flow south and west to the Tanana River, which is a tributary of the Yukon River.

### 3.1.1 Geology, Soils, and Permafrost

3.1.1.1 The geology of the area is classified as Precambrian and Paleozoic-age metamorphic rocks of the Yukon-Tanana crystalline complex, formally known as Birch Creek Shist. The rocks have been intruded by igneous rocks of Mesozoic and Cenozoic age referred to as the Eielson plutons. Younger sedimentary Pleistocene and Holocene loess deposits have overlain the igneous and metamorphic rocks. These deposits originated from the floodplain of the Tanana River and the foothills of the Alaska Range. The loess varies in depth from a few inches on the ridge tops to 40 to 100 feet in the valleys.

3.1.1.2 Soils in the upland areas consist of well-drained silty soils, chiefly loess over bedrock, that varies in depth. Upland soils found on south-facing slopes are generally better drained than those found on north-facing slopes. Soils on north-facing slopes usually are underlain by discontinuous permafrost.

### 3.1.2 Climate and Air Quality

3.1.2.1 Eielson and the YTA have the northern continental climate of interior Alaska, which is characterized by short, moderate summers; long, cold winters; and low precipitation and humidity. The mean annual precipitation in the area is 11.2 inches, much of which comes as snow. The coldest month is January, with an average temperature of minus 10.3°F and an average minimum temperature of minus 19.2°F; the warmest month is July, with an average temperature of 61.7°F and an average maximum of 71.9°F. The minimum amount of daylight is shortest in December with 3 hours 47 minutes of available daylight.

3.1.2.2 May and June have the highest winds, with average wind speeds of 7.7 and 7.2 miles per hour, respectively. During most of the year, the prevailing wind direction is from the north at an average of 5.15 miles per hour. However, in June and July, the wind direction is typically from the southwest. Wind speed can vary with elevation and roughness of surrounding terrain. According to a United States wind energy resource map produced by the Department of Energy (DoE), the area is classified as having a wind power class of 2-3. According to DoE wind power classification, a wind power class 1 is rated as having the lowest potential wind energy and 7 the highest for potential wind energy.

3.1.2.3 Air quality is generally good at Eielson and in the adjoining YTA lands. Portions of the Fairbanks North Star Borough (Fairbanks and North Pole) of which Eielson is also a part of are in maintenance status for carbon monoxide. The Clean Air Act designates areas as *attainment*, *non-attainment*, *maintenance*, or *unclassified* with respect to national ambient air quality

standards (NAAQS). Non-attainment and maintenance areas are locales that have recently violated one or more of the NAAQS and must satisfy the requirements of state and federal implementation plans to bring them back into conformity with the applicable air quality standards. Eielson is located in an *unclassified* area, and activities that generate emissions do not need to satisfy the requirements of the Environmental Protection Agency ruling *Determining Conformity of General Federal Actions to the State or Federal Implementation Plans*.

### **3.1.3 Ground and Surface Water**

3.1.3.1 Groundwater is typically found in small quantities in upland areas in fractures and joints of underlying bedrock. The lack of groundwater in large quantities is attributed to high topographic relief and the well-drained soils found in the area. Groundwater is available in moderate to large quantities from the gravel deposits found in the alluvial plains of stream valleys. The major source of recharge for aquifers is precipitation that enters the ground through infiltration.

3.1.3.2 Surface water in the project area consists of small, high-gradient feeder streams that characteristically exhibit low discharges during the winter months and peak discharges during the summer months. The project area is contained in the drainage basin of Stuart Creek, as well as that of the South Fork Chena River, of which Stuart Creek is a tributary.

### **3.1.4 Wetlands**

Even though wetlands are a predominating physical feature found within Eielson and the YTA, most of the project area is not located in wetlands. A wetlands delineation of the entire route was completed and the wetland areas are shown in Figure 2-1, along a 455-foot-long portion of the line where it crosses Globe Creek. Wetlands that are found in the area are mainly black spruce stands that are interspersed with small amounts of paper birch and tamarack, as well as open areas dominated by scrub/shrub stands of dwarf arctic birch and bog rosemary. Understory in most areas includes Labrador tea, lowbush cranberry, and blueberry. Occasionally the black spruce wetlands are interspersed with wet meadows that support emergent aquatic vegetation (sedges, grasses) in conjunction with seasonally persistent shallow open water areas. The wetlands associated with the proposed route through the Globe Creek drainage are typical of the sedge/wet meadow type.

## **3.2 Biological Resources**

### **3.2.1 Vegetation**

3.2.1.1 The northern boreal forest of interior Alaska is a fire-dependent ecosystem. It is a mosaic of vegetation types made up of a few primary species of wide ecological amplitude that respond to specific combinations of physical characteristics of a site. Topographical characteristics of sites, such as slope and aspect, influence physical characteristics such as microclimate, soil temperature, and moisture regimes, which in turn influence the type of vegetation that will be found there. When the effects of the highly variable fire history are



superimposed on the topographic and micro-topographic patterns, a very complex vegetation pattern results.



**Figure 3-1 – Typical Vegetation in Vicinity of Project Area**

3.2.1.2 Upland plant communities found within the Stuart Creek Impact Area include the following general types:

- Upland Broadleaf Forest
- Upland Mixed Forest
- Upland Needleleaf Forest
- Upland Scrub

3.2.1.3 In wetland areas underlain by permafrost in the Stuart Creek Impact Area, the vegetation types listed below are found. More detailed vegetation classifications using the Alaska Vegetation Classification System (Vioreck et al., 1992) are listed for areas that would potentially be impacted by the proposed action.

- Lowland Low Scrub, which includes potentially impacted types Open Low Shrub Birch-Willow Shrub and Open Low Mixed Shrub-Sedge Tussock Bogs
- Lowland Needleleaf Forest, which includes potentially impacted types closed Black Spruce Forest, Open Black Spruce Forest, Tamarack Forest, and Black Spruce Woodland
- Lowland Moist Meadow
- Lowland Broadleaf Forest
- Lowland Tall Scrub

3.2.1.4 Upland Mixed Forest tends to occur on well-drained sites with little permafrost. This forest type is commonly found on south-facing slopes. Tree species include white spruce, paper birch, quaking aspen, and balsam poplar. Willows, alder, wild rose, blueberry, and highbush cranberry are common shrubs. Mixed forests usually develop from stands of pure or nearly pure broadleaf trees (Upland Broadleaf Forest) such as birch. As the slower growing spruce reach the canopy, the relatively short-lived birch and other broadleaf species begin to mature and die. Mixed forests eventually develop into stands of pure spruce (Upland Needleleaf Forest) as the broadleaf trees, whose seedlings are relatively shade intolerant, continue to drop out without replacement. In some cases, the resultant spruce stand may be fairly open if spruce regeneration is insufficient to maintain a closed overstory canopy. Moderate to heavy wildfire will return this forest type to a relatively pure stand of young broadleaf trees. Birch trees are capable of extensive sprouting, or *suckering*, from the root collar following fire.

3.2.1.5 Lowland Needleleaf Forest tends to occur on poorly drained sites underlain by permafrost. Black spruce forest is common in low-lying areas, drainage basins, and north-facing slopes. Black spruce occurs in closed canopy stands and as scrubby open stands of dwarf trees. Other species commonly occurring in this forest type include tamarack, blueberry, lowbush cranberry, labrador tea, and feather moss. It is unclear what type of black spruce lowland forest, if any, represents a successional climax. Closed canopy black spruce forest tends to return to its original composition after fire (Viereck et al., 1992). In the absence of fire, closed canopy black spruce may transition into scrubby open stands of black spruce as the moss layer thickens. A thicker mat of moss tends to better insulate soils, causing the permafrost level to rise and the soil to be colder and wetter over time.

3.2.1.6 Lowland Low Scrub also occurs on poorly drained sites underlain by permafrost. Open Low Shrub Birch-Willow Shrub may represent a stable climax if moisture conditions are constant. A drop in the water table may favor tree invasion, and a rise in the water table might allow tussocks or ericaceous shrubs to invade, in which case an Open Low Mixed Shrub-Sedge Tussock Bog would result.

3.2.1.7 The portion of the project area within which all of the right-of-way tree removal will occur is forested by relatively young stands of mixed hardwoods and softwoods as is typified by the Upland Mixed Forest regime described above in 3.2.1.4 and depicted in Figures 2-4 and 3-1. Little, if any, of this timber would be considered harvestable (greater than 6 inches in diameter).

### 3.2.2 Wildlife

3.2.2.1 Wildlife species in the surrounding areas are typical of those found in interior Alaska. Large mammals that are likely to be found in nearby habitat include moose, red fox, black bear, snowshoe hare, red squirrel, lynx, marten, wolverine, and coyote. Gray wolves are transient to the area.

3.2.2.2 Migratory waterfowl are scarce in the area due to a lack of open water. However, other migratory birds common to interior Alaska including gulls, swallows, thrushes, sparrows, and warblers, can be found in the area. Non-migratory birds include ravens, jays, chickadees,

songbirds, woodpeckers, grouse, and ptarmigan. Raptors include bald and golden eagles, hawks, kestrels, great horned owls, boreal owls, and hawk owls.

3.2.2.3 Recreational hunting of big and small game species in non-restricted areas is an important activity. Big game species include moose and black bear. Hunting of small game includes snowshoe hare, red squirrel, grouse, and ptarmigan. The Stuart Creek Impact Area is off limits to hunting.

### 3.2.3 Fish

3.2.3.1 As noted in Section 3.1.3.2, the project area is contained in two related drainage basins, Globe Creek (tributary of Stuart Creek) and the South Fork Chena River of which Stuart Creek is a tributary. Stuart Creek and Globe Creek support arctic grayling and round whitefish. No recreational fishing occurs in Globe or Stuart Creek due to its location entirely within the Stuart Creek Impact Area, a restricted access area.

3.2.3.2 The Alaska Department of Fish and Game have data that shows the South Fork of the Chena River supports all age groups of arctic grayling, round whitefish, longnose suckers, and slimy sculpins. King salmon have been observed in the South Fork of the Chena River below Martin Creek, and it is not known whether they continue upstream into the YTA.

3.2.3.3 The Alaska Department of Fish and Game lists the South Fork of the Chena River as an anadromous fish stream. All species listed have a tendency to move out of upstream areas into deeper waters during the winter, and thus are not expected to be present during the winter months. All of the streams in the YTA are thought to be relatively productive from a fisheries standpoint. The Chena River supports a large recreational fishery, primarily targeting arctic grayling. No data exists to determine the extent to which streams in the impact area contribute to this fishery.

### 3.2.4 Threatened or Endangered Species

3.2.4.1 There are no known threatened or endangered species within the proposed project area. However, the proposed project site is within the range of the American peregrine falcon (*Falco peregrinus anatum*), which was removed from the list of threatened and endangered species in 1999. Peregrine falcon's nests have been located on the Salcha and Goodpasture River drainages to the southeast, and the Charley and Yukon River drainages to the northwest of the proposed project area. The American peregrine falcon is known to nest in the Salcha River Bluffs located approximately 15 miles to the south. Potential peregrine falcon habitat is not found within the nearby Stuart Creek Impact Area, and none have been observed nesting in this area. Another federally delisted subspecies, the Arctic peregrine falcon (*Falco peregrinus tundrius*), is not known to nest within several hundred miles of the area. The only occurrence of either subspecies in the proposed project area is transitory during migration periods.

3.2.4.2 Due to its recent recovery from endangered status, the USFWS will monitor the American peregrine falcon on a regular basis for the next decade. If survey data indicate a reversal in recovery, the American peregrine falcon could be emergency listed at any time.



Therefore, the USFWS recommends agencies avoid impacts to peregrine falcons to assure a healthy long-term population.

3.2.4.3 No federal or state listed threatened or endangered plant species have been listed as occurring within Eielson or Fort Wainwright YTA.

### **3.3 Social and Cultural Environment**

#### **3.3.1 Economic Factors**

Eielson and Fort Wainwright contribute substantially to the economics of the surrounding communities (Fairbanks, North Pole, Salcha, and Delta Junction). Activities in the YTA are, however, not a major component of that economy. There are no permanent residents within the YTA and use of the area is temporary at any given point in time. Goods and services that the military utilizes for support of the operation of the range do have an economic benefit for the aforementioned communities.

#### **3.3.2 Land Use and Planning**

The project area is located in the north central portion of the YTA and is approximately 30 miles southeast of Fairbanks and 11 miles east of Eielson. The YTA contains a restricted airspace use area (R-2205) known as the Stuart Creek Impact Area. The airspace is restricted to military use only up to 20,000 feet mean sea level. It is used for air-to-air tactical training, direct and indirect firing, and aerial gunnery practice by both the USARAK and the USAF. The impact area is divided into two sections: the actual impact area and a buffer zone. The buffer zone and a prohibited tactical training area separate the impact area from the Chena River Recreation Area located approximately 20 miles to the northeast of the impact area. All personnel are prohibited from entering the actual impact area for recreational activities because of the possibility of encountering unexploded ordnance within the area.

#### **3.3.3 Historical and Archeological Resources**

3.3.3.1 Lands contained in the YTA were occupied at the time of Euro-American contact by Lower-Middle Tanana Athabascans. These included the Salcha, Big Delta-Goodpaster, Wood River, and Chena bands. Traditional settlement patterns focused on being mobile, following the caribou migration in the winter and fish, berry, and root gathering in the summer. Archeological research in the YTA has resulted in a rich, but certainly incomplete, record of all of the accepted prehistoric cultures of the Alaskan interior. Work has been largely stratified in nature and as little as 1 percent of the surveyable area has been addressed. In spite of this its archeological record represents all of the accepted prehistoric cultures of the Alaskan interior.

3.3.3.2 During the 2004 summer field season, Fort Wainwright personnel conducted an archeological survey of those areas that correlated with the proposed route of the Phase 3 power and fiber optic line. A 66-meter-wide corridor was surveyed in conjunction with the proposed power line corridor. Five known sites are in proximity to the project area, however, it was determined that none of these sites would be impacted. A pedestrian survey and subsurface

testing identified one isolated find that is not eligible for inclusion on the National Register of Historic Places. Overall it was deemed that the proposed project would not affect any historic properties. The results of this survey were published in the *USAG-AK Cultural Resources Annual Report 2004*.

### **3.4 Recreational Resources**

3.4.1 The YTA lands are used extensively for outdoor recreation. Popular forms of recreation include hunting, trapping, off-road vehicle use, and snowmobile use. Residents of Eielson are the primary users, presumably because of the proximity of their homes to these areas. In addition, residents of Salcha and Two Rivers, two neighboring communities, recreate in the YTA. Although it is open to all users, military and civilian alike, the general public feels uneasy about driving into an area with warning signs, restrictions, and requirements for permits. In addition, access for the general public is somewhat limited and, to a large extent, highly regulated.

3.4.2 Hunters, fishermen, and trappers are required to obtain a recreational access permit prior to using military lands. Hunters in the YTA harvest an average of 53 moose per year with two moose per year harvested by hunters on Eielson (bow hunting only).

### **3.5 Subsistence**

The YTA is not a significant subsistence use area for rural Alaskans. Most of the project area does not receive subsistence use because it is contained within, or immediately adjacent to, the Stuart Creek Impact Area, a restricted area that is off limits to all but military uses of the land.

### **3.6 Hazardous Materials and Hazardous Wastes**

3.6.1 Prior to the construction and installation of a power grid to provide power to facilities in the YTA, there were 27 constant-run diesel generators operating throughout the range. Maintenance and refueling of these generators was an expensive and labor intensive operation that required hauling diesel fuel over rough terrain and handling fuel in extreme weather conditions. This process resulted in numerous small fuel spills for which cleanup was often expensive and logistically difficult. The installation of power in Phases 1, 2, and 3 has eliminated the need for more than half of these generators.

3.6.2 As part of the operation of USAF facilities in the YTA, several different kinds of hazardous materials and hazardous wastes are utilized and generated. They are used and processed in accordance with the base's hazardous materials management plan.



## **4.0 Environmental Consequences**

Section 4 is organized by resources, with the environmental consequences evaluated for each alternative. This discussion will provide a scientific and analytic basis for the comparisons of the alternatives and describes the probable consequences (impacts and effects) of each alternative on selected environmental resources. The effects of each alternative upon each resource are discussed in the same order that they were presented in Section 3, beginning with the proposed action. Impacts that are common to all alternatives are stated as such and are addressed in the appropriate sections.

### **4.1 Physical Resources**

#### **4.1.1 Geology, Soils, and Permafrost**

##### **4.1.1.1 Proposed Action**

4.1.1.1.1 In those areas where the existing road corridor does not provide an open right-of-way, removal of vegetation for transmission line installation would be accomplished with a hydro-axe, but would not result in a disturbance to soils other than minor compaction. The primary disturbance to soils would result from the augering of holes for the installation of 55 utility poles and guy wires. Approximately 55 cubic yards of soil (approximately 1 cubic yard per pole) would be disturbed and displaced with the installation of the utility poles. Installation for each utility pole would create a spoil amount of approximately 1 cubic yard of native soil. The excess soils would be spread out over a 6-foot diameter area around the pole and would naturally revegetate with native grasses and ground covers. Erosion impacts would be negligible.

4.1.1.1.2 Soil compaction could occur during construction due to off-road movement of pole drilling equipment. There is also some risk of soil disturbance, erosion, and sedimentation from these activities, especially in the vicinity of Globe Creek. Use of silt fences and other sediment control measures will be used and are part of the Storm Water Prevention Plan permit that would be required for the project.

##### **4.1.1.2 Alternative 1**

4.1.1.2.1 Approximately 24 cubic yards of soil would be excavated as part of the construction of a 10- by 10-foot by 3-foot-thick concrete pad for the wind turbine tower at Camera Site 2. An additional 15- by 20-foot by 2-foot-thick concrete pad would be constructed to house equipment and storage batteries for operation of the wind generation system. The soils removed would be evenly distributed around the base and would naturally revegetate with native grasses and ground cover. Erosion would be negligible.

4.1.1.2.2 Soil compaction could occur during construction due to heavy equipment use at the site. However, these disturbances should be minimal since the tower would be located in uplands.

#### **4.1.1.3 No Action Alternative**

There would be no additional disturbance to soils under this alternative. However, the potential for soil contamination may be greater with this alternative due to risks associated with fuel transfer spills and accidents in operating the constant-run diesel generator that would be part of maintaining the existing system of power generation. Three hazardous material releases of reportable quantity have been recorded in the past 2 years associated with the operation of the generators. The USAF and USARAK will continue to respond to hazardous spills in cooperation with state and federal agencies.

#### **4.1.2 Climate and Air Quality**

##### **4.1.2.1 Proposed Action**

4.1.2.1.1 The proposed power upgrade to YTA facilities would eliminate most use of diesel generators. The backup generators would only be required during power failures. The overall air quality in the vicinity of Hill 1710 and FP-16 would improve due to the reduction in emissions that are currently emitted by constant-run diesel generators.

4.1.2.1.2 Air quality may be temporarily diminished during construction due to emissions produced by construction equipment. Airborne particulate matter in the form of dust emissions may also increase if the construction occurs during dry summer months.

##### **4.1.2.2 Alternative 1**

4.1.2.2.1 Under this alternative, a 50 kW wind generator would be installed at Camera Site 2. A diesel-powered backup generator with automatic start would be incorporated into the system to provide power during periods of low wind. Overall air quality in the vicinity of Camera Site 2 would improve due to reduced run time of the diesel generators. The reduction in emissions at each site is dependent upon the amount and consistency of electric power produced by the wind turbines. Thus, air quality would fluctuate depending upon wind power availability.

4.1.2.2.2 Electricity produced by wind generation would emit no emissions to the environment. It is estimated that the 50 kW wind generator would displace approximately 100 tons of carbon dioxide produced annually from other electric sources such as a coal-burning power plant (*Environmental Emissions from Energy Technology Systems: US Dept. of Energy, 1989*).

4.1.2.2.3 Air quality may be temporarily diminished during construction due to emissions produced by construction equipment. Airborne particulate matter in the form of dust emissions may also increase if the construction occurs during dry summer months.

##### **4.1.2.3 No Action Alternative**

There would be no changes to the existing air quality under the no action alternative. This alternative would produce more emissions at Camera Site 2 than the proposed action or

alternative 1 due to emissions produced by the constant-run generators that would remain in place.

### **4.1.3 Ground and Surface Water**

#### **4.1.3.1 Proposed Action**

The proposed action would likely result in reduced risk of impacts to both groundwater and surface water. Over the years that the range facilities have been in operation, several fuel spills have occurred while operating and fueling the generator systems. With only backup generators being kept, the frequency and amount of fuel that is handled will be significantly reduced.

#### **4.1.3.2 Alternative 1**

This alternative would also result in a reduced risk of oil spills, as fuel needs would be greatly reduced with the use of wind generation as the primary power source at Camera Site 2.

#### **4.1.3.3 No Action Alternative**

Under this alternative the continued operation of the constant run generators would likely result in continued minor spills in association with these operations, likely having impacts on surface water resources.

### **4.1.4 Wetlands**

#### **4.1.4.1 Proposed Action**

4.1.4.1.1 Impacts to wetlands would likely result from the proposed action. This would occur along the portion of the power line that runs from Beaver Creek Road to FP-17. The line crosses wetlands for a distance of approximately 760 feet and would require the placement of three power poles to traverse this portion of the line.

4.1.4.1.2 Impacts to wetlands that could result from line installation include the following:

- *Compaction of soils from use of equipment in the 30-foot-wide right-of-way proposed for construction activities.* Work would be accomplished in the spring while ground is still frozen, significantly minimizing the affects of soil compaction. Maximum area potentially impacted would be 4.3 acres of wetlands.
- *Loss of vegetation in the construction right-of-way.* Movement of construction equipment and augering of three holes for the installation of power poles would result in some loss of wetland vegetation. If activities are conducted when the ground is still frozen, vegetation disturbed would likely grow back during the next several growing seasons. The same 4.3 acres would be the maximum area of vegetation impacted.
- *Disturbance to soils from power pole installation and movement of equipment in wetlands.* Installation of power poles at three locations in wetlands would require that an

18-inch diameter hole be augured to a depth of 7 to 8 feet. Material from this excavation will be spread around the base of the power pole. Total area of disturbance for three poles would be approximately 100 square feet. As a result of the placement of soil in this manner, some erosion and transport of sediment may occur during breakup or increased surface water flow. Due to the limited amount of sediment available for transport, this would likely not have significant impacts to the surrounding wetlands.

#### **4.1.4.2 Alternative 1**

No impacts to wetlands would occur as a result of implementation of alternative 1. All activities associated with construction of the wind generator system would be in non-wetland areas.

#### **4.1.4.3 No Action Alternative**

No impacts to wetlands would occur with this alternative.

### **4.2 Biological Resources**

#### **4.2.1 Vegetation**

##### **4.2.1.1 Proposed Action**

Under the proposed action existing vegetation would be impacted as part of the clearing of the transmission line right-of-way. A 30-foot-wide corridor would be established, mainly through hydro-axing of vegetation. The extent to which this would occur is difficult to quantify, as portions of the right-of-way are already cleared as part of the construction of the Beaver Creek Road. The height and distance of trees from the centerline of the power line right-of-way will determine which trees will need to be removed (see Figure 4, page 8). The actual amount of trees that would be cleared along this route would likely be minimal due to the previously cleared areas adjacent to the existing Beaver Creek Road. Much of the installation of the power poles would be at the end of the toe slope of the existing road surface. Equipment would be situated, in most cases, on the road surface from which they would auger the holes and install the poles, resulting in little impact to vegetation between the poles except what occurs during hydro-axing. Quantifying the exact acreage that would be removed by hydro-axing or tree removal is not easily done, but is likely to be significantly less than the 33 acres that defines the power line corridor.

##### **4.2.1.2 Alternative 1**

There would be little or no impact to vegetation from the construction of a wind power system at Camera Site 2. All facilities would be contained in the existing Camera Site 2 facility.

##### **4.2.1.3 No Action Alternative**

This alternative would not result in any additional loss of vegetation.

## **4.2.2 Wildlife**

### **4.2.2.1 Proposed Action**

4.2.2.1.1 Loss of forest and shrub habitat due to tree removal in the power line corridor would likely have an overall benefit to wildlife such as moose and black bear. The hydro-axing of mature aspen, balsam poplar, and birch trees causes an increase in root suckers. Creating a clearing for the transmission line may benefit other species such as snowshoe hare, red fox, lynx, and raptors by providing edge habitat. Young saplings and suckers are an important food source for moose and invading grasses and shrubs are a source of food and cover for voles and mice. Removal of standing dead trees, however, could decrease nesting habitat for cavity nesting birds and feeding habitat for birds that utilize insects. No direct impacts to wildlife are anticipated with the proposed construction of the transmission line other than the possibility of minor disruptions to wildlife movement as typically found during the construction phase of projects.

4.2.2.1.2 Electrical lines and utility poles have the potential to result in avian fatalities due to electrocution and bird strikes with utility poles. Most bird electrocutions occur on low voltage distribution systems where the spacing of the electrical conductors is less than 7 feet. The closer spacing is a hazard to raptors and other large birds because their body size and wingspan are big enough to span the distance between the conductor wires, completing an electrical circuit. Another major source of bird electrocution results from pole mounted transformers. A bird landing on top of a transformer can easily contact an energized jumper wire while its feet are on the grounded transformer. Mitigation methods have been incorporated into the design of this power line to include adequate spacing between phase conductors and insulating caps on the conductors. Significant numbers of bird mortalities are not anticipated from the installation and operation of this power line.

4.2.2.1.3 Whenever trees and shrubs are cut there is the potential to impact nesting birds. Nesting of most bird species in Alaska occurs in the interior between May 15 and July 15. This project will restrict its hydro-axing operations to periods outside of that time frame, thus avoiding direct impacts to nesting birds.

### **4.2.2.2 Alternative 1**

4.2.2.2.1 Possible impacts to birds could occur with alternative 1. Affects on bird populations could result from deaths caused by wind turbines. Violations of the Migratory Bird Treaty Act or the Endangered Species Act, or both, could result if fatalities occurred to protected species. The National Renewable Energy Laboratory, a DoE organization, is working with environmental groups, government agencies, and other interested parties to address this issue.

4.2.2.2.2 Studies have found that higher levels of mortality have occurred in coastal locations where large concentrations of waterfowl are found or where wind turbines are located in highly used migration corridors. The USFWS has also presented evidence that higher mortality rates occur with towers greater than 200 feet aboveground and towers that are illuminated with navigational warning lights. The tower used in alternative 1 would be 170 feet and would not have navigational warning lights. It is also located in an area that does not typically see large



concentrations of birds moving through the area as is found further to the west in the Tanana River basin.

4.2.2.2.3 The USFWS in cooperation with various support agencies have established recommendations to mitigate avian mortality. Recommendations pertinent to this alternative are as follows:

- Users should employ radar, acoustic, and ground survey techniques that could then be used to determine major migratory corridors or routes (not necessarily flyway-oriented) to avoid siting towers in these areas.
- Avoid siting towers in or near wetlands, near other known bird concentration areas (e.g., National Wildlife Refuges), or in habitat of threatened or endangered species known to be impacted by towers.
- Guyed towers constructed in known raptor or waterfowl concentration areas should use daytime visual markers (e.g., bird diverter devices) on the guy wires to prevent collisions by these diurnally active species.
- The operator should develop an effective dead bird monitoring protocol.

All of these recommendations would be incorporated into any proposed wind turbine design that would be constructed under this alternative.

4.2.2.2.4 No other impacts to the localized wildlife habitat are anticipated other than the possibility of minor disruptions to wildlife movement as typically found during the construction phase of projects.

#### **4.2.2.3 No Action Alternative**

Implementation of this alternative would not result in any loss of wildlife habitat.

### **4.2.3 Fish**

#### **4.2.3.1 Proposed Action**

The implementation of the proposed action could have minor impacts on fishery resources in Globe Creek, a small tributary of the Stuart Creek that the power line right-of-way would cross. Some minor disturbance to soil could happen in wetlands associated with Globe Creek and could result in increased sediment loads in the stream. Although this is unlikely, if it were to occur, it would likely be a temporary situation (one seasonal cycle) until natural revegetation had occurred in the disturbed areas.

#### **4.2.3.2 Alternative 1 and the No Action Alternative**

No impacts to fishery resources would occur from these alternatives.

#### **4.2.4 Threatened or Endangered Species**

No known threatened or endangered species inhabit the area and would, therefore, not be impacted by the selection of any alternatives being considered.

### **4.3 Cultural and Historic Resources**

#### **4.3.1 Economic Factors**

Since the YTA is an isolated area with no permanent residents, the only economic impact that would result from the proposed action and alternative 1 would be from the infusion of money paid to contractors for the construction of the project infrastructure. This would be relatively minimal as the total cost of the project is just over 1 million dollars.

#### **4.3.2 Land Use Planning**

As stated in Section 3.3.2 of this document, the project area is located in the north central portion of the YTA and is approximately 30 miles southeast of Fairbanks and 11 miles east of Eielson AFB. The YTA contains a restricted use area (R-2205) and is used for air-to-air tactical training, direct and indirect firing, and aerial gunnery practice by both the USARAK and the USAF. No change in land use of this area would result from this project.

#### **4.3.3 Historical and Archeological Resources**

There would likely be no impact to cultural or historical resources from implementation of any of the alternatives. The Beaver Creek Road corridor has been surveyed with no resources found that are eligible for listing on the National Historic Register. In the event any signs of cultural or historic resources were encountered during construction, all activities would cease until a professional archeologist evaluated the finding. The Alaska State Historic Preservation Office and appropriate base authorities would also be contacted.

### **4.4 Recreational Resources**

4.4.1 Implementation of the proposed action, alternative 1, and the no action alternative would likely have no effect on recreational resources. As stated in Section 4.2.2, the project is likely to result in some increased wildlife (browse) habitat and could enhance the opportunity for recreational hunters in the area.

4.4.2 Clearing of the powerline right-of-way in the vicinity of the Stuart Creek Impact Area could result in its use by all-terrain vehicles (ATVs). However, there are several other similarly configured trails that have been cut in the past and it has not resulted in a noticeable increase in use of the area. Signs are posted along Beaver Creek Road that identify the area as off-limits. Gating the right-of-way would not be a deterrent to its use as ATVs would likely go around such a barrier.

#### 4.5 Subsistence Activities

Construction of the power line would not impact subsistence use of the YTA.

#### 4.6 Hazardous Materials and Hazardous Wastes

During construction there would be some risk of fuel spills associated with the operation of heavy equipment. Post construction, there would be a reduced risk of spilling hazardous materials such as fuel and motor oil as the new power systems would result in less fuel being hauled on trucks to fill generator tanks. All spills would be cleaned up in accordance with Eielson's Oil Spill Contingency Plan.

#### 4.7 Environmental Justice

4.7.1 Environmental justice, as it pertains to the NEPA process, requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. To accomplish these requirements the USAF must conduct an environmental justice analysis of all potential impacts that may result from the proposed actions.

4.7.2 The site of the proposed project is located on federal lands designated for military operations. The closest residential area to this site, other than Eielson housing, is the community of Moose Creek located approximately 14 miles to the northwest. This residential area does not exhibit characteristics of low-income or minority populations that are not exhibited in the Fairbanks area population as a whole. Similarly, no native claims or allotments are located within a 10-mile radius of the project area. Based on the environmental impacts identified in this EA and on a corresponding environmental justice analysis, it is felt that no disproportionate impact to minority or low-income populations would occur from implementation of this project.

#### 4.8 Cumulative Impacts

4.8.1 Cumulative impact is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Individual actions may result in minor impacts but collectively may result in significant actions taking place over a period of time.

4.8.2 Cumulative impacts associated with the construction and expansion of military facilities in Alaska have been addressed in several previous environmental documents. These documents include *Alaska Military Operations Areas-EIS* (US Air Force 1995); *Alaska Army Lands Withdrawal Renewal-Final Legislative EIS*, U.S. Army 1998; *Fort Wainwright Resource Management Plan and Final EIS U.S.D.I., Bureau of Land Management*, 1989; *Final EIS for Transformation of U.S. Army Alaska*, 2004; *Integrated Natural Resources Management Plan 2002-2006 U.S. Army Alaska Volume 3*; and *Integrated Natural Resources Management Plan, Eielson Air Force Base*, 2003. The analysis provided in these documents have all come to the



conclusion that activities associated with military operations in interior Alaska have, to date, not resulted in significant cumulative impacts.

4.8.3 In conducting a cumulative impacts analysis, one must first define the geographic region within which the analysis will be conducted. For the purpose of this EA, it is deemed appropriate that it be focused on military lands in the interior of Alaska. There may be a few migratory bird species whose range goes beyond this defined region, but in general those populations are not significantly impacted by activities that occur in interior Alaska. There are approximately 1.5 million acres of lands set aside for military use that is actively used by the US Army and the USAF and, except for the species referenced above, it is unlikely that any impacts associated with this project would have any affect beyond interior Alaska.

4.8.4 The proposed action would result in impacts along a 2.84-mile-long, 30-foot-wide power line corridor. Previous and current construction and operations activities by the USAF have resulted in impacts to approximately 343 acres of land. In addition, the US Army has impacted an additional 4,158 acres as documented in a recent cumulative impacts analysis in the US Army Alaska's EA for the *Range Expansion Upgrade Projects, Fort Wainwright, Alaska, Environmental Assessment and Finding of No Significant Impact*. However, when considered on a regional basis, the US Army's and the USAF's activities in interior Alaska have resulted in highly localized and cumulatively insignificant impacts. Relative to the 1.5 million acres of military withdrawn lands in interior Alaska, the impacted acreage is quite small (0.002 percent of the total). Also, strict land use planning guidelines and construction and operational best management practices have minimized cumulative impacts even further on the lands that have been affected.

#### **4.9 Unavoidable Adverse Impacts**

The unavoidable impacts that might result from implementation of the proposed action would be a limited amount of clearing of vegetation along the power line corridor.

#### **4.10 Relationship of Short-Term Uses and Long-Term Productivity**

##### **4.10.1 Proposed Action**

The short-term uses and benefits with this alternative is that the USAF would receive a reliable, economical, and maintainable power supply. Annual operating costs to operate the facilities served by the power and communication grid would decrease. Localized air quality in the vicinity of Camera Site 2 and Beaver Creek Road would increase. If the transmission line were no longer needed, the line could be removed and the area would eventually be restored to long-term productivity.

##### **4.10.2 Alternative 1**

The USAF would upgrade the power source to Camera Site 2 with a more economical system. Depending on the availability of wind resources, the burning of fossil fuels could be greatly reduced, which would result in a reduction of emissions. If the wind turbine was no longer

deemed necessary, the components could be removed and the area could be restored and allowed to naturally revegetate.

#### **4.10.3 No Action Alternative**

The range would continue with its current power source and communication systems. There would be no loss of vegetation and no disruption to long-term productivity of resources.

#### **4.11 Irreversible and Irretrievable Commitments of Resources**

Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long-term. Irretrievable commitments are those that are lost for a period of time. There are no irreversible commitments associated with the proposed action, alternative 1, or the no action alternative. No irretrievable commitments of resources would occur.

#### **4.12 Mitigation**

Design considerations that will reduce bird fatalities and best management practices during construction have been incorporated into the project design. Some of these include:

- Time of the year construction window, no tree clearing May 15 to July 15
- Power line design that mitigates avian mortality
- Wind turbine design that reduces avian mortality
- Clearing of unexploded ordnance in the vicinity of the project are in Stuart Creek Impact Area

Other than these measures, no specific mitigation is proposed or required.

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## 6.0 Bibliography and Glossary

### 6.1 Bibliography

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## 6.2 Glossary

*Erosion* – The wearing away of soil or organic matter by flowing water or wind.

*Footprint* – The maximum area required for the firing of weapons or detonation of munitions.

*Loess* – Unstratified deposits of silt and loam that are primarily deposited by the wind.

*Mitigate* – To reduce or negate the effects of an environmental disturbance.

*Permafrost* – Permanently frozen subsoil.

*Physiographic* – A region containing the same general natural characteristics.

*Recharge* – Surface water which percolates through porous soils to become part of the groundwater.

*Upland* – The higher parts of a region or tract of land.

*Wetlands* – Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soils conditions.

